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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/342,789

06/29/1999

DAVID J. CORISIS

3384.1US

7096

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06/15/2004

TRASK BRITT & ROSSA

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SALT LAKE CITY, UT 84110

EXAMINER

GRAYBILL, DAVID E

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/342,789

Applicant(s)

CORISIS, DAVID J.

Examiner

David E Graybill

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 7-11, 20-24 and 33-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 12-19, 25-32, 38 and 39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features of claims 1-6, 12-19, 25-32, 38 and 39 must be shown or the features canceled from the claims. To further clarify, the drawings do not show the claimed embodiment comprising a paddle frame having no electrical leads for connection to a semiconductor device and paddle support bars, or the claimed embodiment comprising the substrate and the paddle frame.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not

to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6, 12-19, 25-32, 38 and 39 are rejected under 35

U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. The undescribed subject matter is the following:

Claims 1, 14 and 27, the embodiment comprising a paddle frame having no electrical leads for connection to a semiconductor die and paddle support bars. To further clarify, in the specification, page 6, lines 8-9, applicant discloses that the paddle support bars are electrical leads for connection to a semiconductor die because they are capable of being used

for the intended use as electrical leads for connection to a semiconductor die.

Claims 12-19, 25, 38 and 39, the embodiment comprising the substrate and the paddle frame.

Claims 1-6, 12-19, 25-32, 38 and 39 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The undescribed subject matter is the following:

Claim 1, the limitation, "the paddle frame including a pair of side rails, a plurality of cross-members, and a generally centrally positioned paddle of a plurality of paddle frames having the pair of side rails and the plurality of cross members connected to said paddle by a plurality of paddle support bars."

Claims 1, 14 and 27, the embodiment comprising a paddle frame having no electrical leads for connection to a semiconductor die and paddle support bars.

Claims 12-19, 25, 38 and 39, the embodiment comprising the substrate and the paddle frame.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6, 12-19, 25-32, 38 and 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the limitation, "the paddle frame including a pair of side rails, a plurality of cross-members, and a generally centrally positioned paddle of a plurality of paddle frames having the pair of side rails and the plurality of cross members connected to said paddle by a plurality of paddle support bars" is grammatically awkward, confusing and incomprehensible.

In claims 1, 14 and 27, the limitations, "a paddle frame having no electrical leads for connection to a semiconductor die" and "paddle support bars" are mutually exclusive because, as disclosed in the specification as cited supra, the paddle support bars are electrical leads for connection to a semiconductor die because they are capable of being used for the intended use as electrical leads for connection to a semiconductor die.

In the rejections *infra*, generally, reference labels are recited only for the first recitation of identical claim elements.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 12-17, 25-30, 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakashima (5661086) and Fujimoto (5773896).

At column 6, lines 21-24; column 6, line 55 to column 7, line 1; column 7, line 62 to column 9, line 42; and column 11, line 1 to column 12, line 32, Nakashima discloses the following:

A semiconductor device assembly of a plurality of semiconductor device assemblies, comprising: a semiconductor die 14 having an active surface having a plurality of bond pads 13 thereon and an opposing second surface; at least one projection 25 connected to at least one bond pad of said plurality of bond pads on the active surface of said semiconductor die for direct connection to a substrate 17; and a paddle frame 33 having no electrical leads for connection to a semiconductor die, the paddle frame including a pair of side rails 31, a plurality of cross-members (not labeled

but illustrated between 32, 32a and 34, 34a, respectively), and a generally centrally positioned paddle 12 of a plurality of paddle frames having the pair of side rails and the plurality of cross members connected to said paddle by a plurality of paddle support bars 32, 32a, said second surface of said semiconductor die being secured to said paddle, the paddle being attached to the side rail by at least two of the plurality of paddle support bars and being attached to the cross members by at least two of the plurality of support bars; a substrate 17 having circuit connections 21, said plurality of bond pads bonded to said circuit connections; sealant packaging material 26 enclosing a portion of said semiconductor die and covering a portion of said substrate.

A semiconductor device assembly of a plurality of semiconductor device assemblies, comprising: a semiconductor die having an active surface having at least one bond pad thereon and an opposing second surface; at least one projection secured to said at least one bond pad on said active surface of said semiconductor die connected to a substrate; and a metal paddle from a paddle frame having no electrical leads for connection to the semiconductor die of a plurality of paddle frames connected by a pair of rails having a plurality of cross members therebetween, said second surface of said semiconductor die being attached to said paddle, said metal paddle



attached to at least one side rail by at least a plurality of paddle support bars and being attached to a plurality of cross members by said support bars; a substrate having a plurality of circuit connections, said at least one bond pad connected to at least one circuit connection of said plurality of circuit connections; sealant packaging covering a portion of said semiconductor die and a portion of said substrate.

A semiconductor device assembly of a plurality of semiconductor device assemblies, comprising: a semiconductor die having an active surface having a plurality of bond pads thereon and an opposing second surface; a plurality of projections connected to said plurality of bond pads for direct connection to a host circuit board 17; and a metallic paddle having no electrical leads for connection to a semiconductor die secured to said second surface of said semiconductor die, said metallic paddle being attached to at least one side rail by at least a plurality of paddle support bars and being attached to a plurality of cross members by said support bars of a paddle frame; a substrate having a plurality of circuit connections, said plurality of bond pads connected to said plurality of circuit connections; sealant packaging covering a portion of said semiconductor die and a portion of said substrate.

However, Nakashima does not appear to explicitly disclose wherein said plurality of projections comprises a ball grid array (BGA) of solder balls; wherein said plurality of projections comprises balls deposited by a wire bonding machine; and wherein said plurality of projections comprises a plurality of stud bumps deposited by a wire bonding machine.

Nonetheless, at column 7, lines 1-23; column 9, lines 12-25; and column 14, lines 1-4, Fujimoto discloses wherein a plurality of projections 22 comprises a ball grid array (BGA) of solder balls; wherein a plurality of projections comprises balls; and wherein a plurality of projections comprises a plurality of stud bumps. Moreover, it would have been obvious to combine the product of Fujimoto with the product of Nakashima because it would facilitate electrical connection to a second semiconductor chip.

Also, although Nakashima does not appear to explicitly disclose the process limitation, "deposited by a wire bonding machine," the product of Nakashima inherently possesses any structural characteristics imparted by the process limitation. See *In re Fitzgerald, Sanders, and Bagheri*, 205 USPQ 594 (CCPA 1980).

Claims 5, 6, 18, 19, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakashima and Fujimoto as applied to claims 1-4,

12-17, 25-30, 38 and 39, and further in combination with applicant's admitted prior art.

Although Nakashima does not appear to explicitly teach an electrically non-conductive adhesive layer connecting said second surface to said metallic paddle; wherein said adhesive layer comprises one of epoxy and polyimide, at page 5, lines 11-20 applicant teaches that this product is well known. Furthermore, it would have been obvious to combine the well known product with the product of Nakashima because it would facilitate provision of the die 14 secured to the paddle 12.

Applicant's amendment and remarks filed 4-2-4 have been fully considered and are moot in view of the new grounds of rejection.

The references applied in the new grounds of rejection, however, were similarly but not identically applied in the Office action mailed on 6-21-2, and some of the remarks filed on 9-25-2 in response to the action mailed on 6-21-2 are relevant to the present rejections. These relevant remarks are addressed infra.

Applicant asserts, "there is no teaching or suggestion to replace die 14 with the flip-chip of Fujimoto."

This assertion is respectfully deemed unpersuasive because the rejection does not rely on a teaching to replace die 14 with the flip chip of Fujimoto.

Applicant also contends that, "modifying the teachings of Nakashima and Fujimoto to that of the present invention would also require a teaching or suggestion to eliminate circuit substrate 17."

This contention is respectfully traversed because it is unsupported by proof or a showing of facts; hence, it essentially amounts to mere conjecture. Ex parte Gray, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989) (statement in publication dismissing the "preliminary identification of a human b - NGF - like molecule" in the prior art, even if considered to be an expert opinion, was inadequate to overcome the rejection based on that prior art because there was no factual evidence supporting the statement); In re Beattie, 974 F.2d 1309, 24 USPQ2d 1040 (Fed. Cir. 1992) (declarations of seven persons skilled in the art offering opinion evidence praising the merits of the claimed invention were found to have little value because of a lack of factual support); Ex parte George, 21 USPQ2d 1058 (Bd. Pat. App. & Inter. 1991) (conclusory statements that results were "unexpected," unsupported by objective factual evidence, were considered but were not found to be of substantial evidentiary value).

In addition, applicant alleges, "the present invention omits the Nakashima element of circuit substrate 17."

This allegation is respectfully traversed because the scope of the claims is not limited to omission of the Nakashima element of circuit substrate 17.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

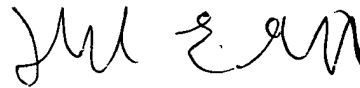
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**Any telephone inquiry of a general nature or relating to the status (MPEP 203.08) of this application or proceeding should be directed to Group 2800 Head SAE Linda Hodge-Taylor whose telephone number is 571-272-1585.**

Any telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (571) 272-1930. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.

The fax phone number for group 2800 is (703) 872-9306.



David E. Graybill  
Primary Examiner  
Art Unit 2827

D.G.  
10-Jun-04